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COMPUTER SCIENCE NEWSLETTER

No. 82

Edited by C. A. Ford

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GENERAL NEWS

Project '72 1
Suggestions 3
Burton Tower Graffiti Board 4
Personnel Changes 5
User Services Group Consultation by Appointment 5
News From the Department of Computer Science 6
Recent Acquisitions in Department of Computer Science Library . . 7

PRODUCTION AND QUALITY INFORMATION

Production Statistics 9
System Reliability 11
Daily Summary of System Problems 11
Credit Requests for October 12
System Status Bulletins Issued 13
Special Flash About SPITBOL 13

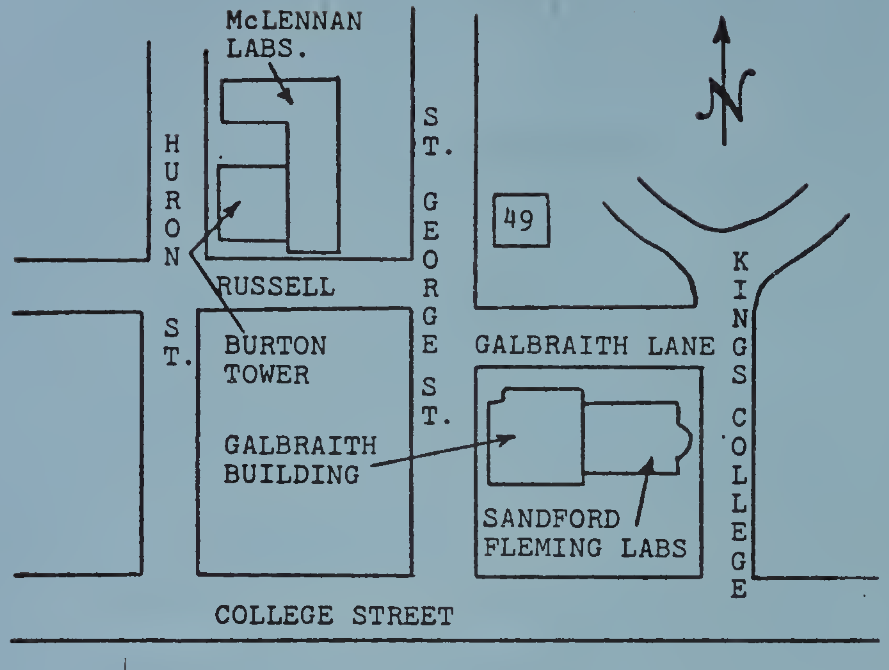
S/360 GENERAL SERVICES

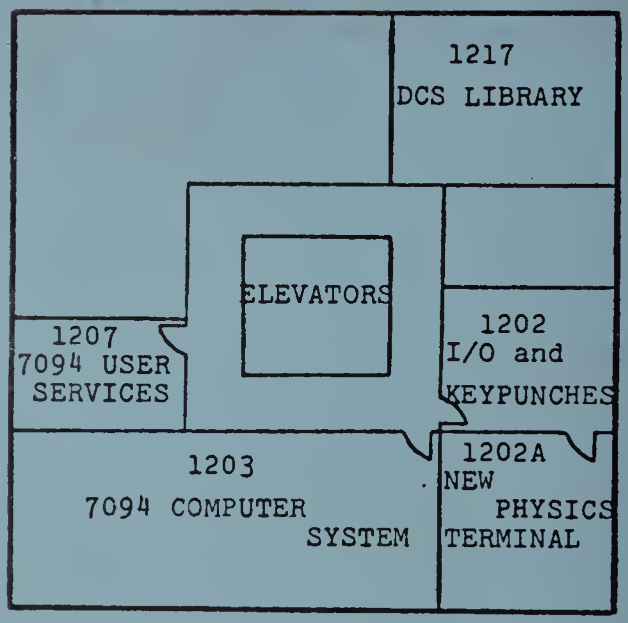
Scheduled Downtime for Installation of System/370 14
New Services and Facilities for System/360 Magnetic Tapes and Disks 15
New Paper Tape to Magnetic Tape Conversion Facility 15
The Use of Special Printer or Punch Forms 17
Additions to Phone Service 17
M is for Mystery 17
Release 20.1 of Operating System/360 18
Statistics on Catalogued Procedure Usage 20

INTERACTIVE TERMINAL SYSTEMS 23

HIGH SPEED JOB STREAM SERVICES 25

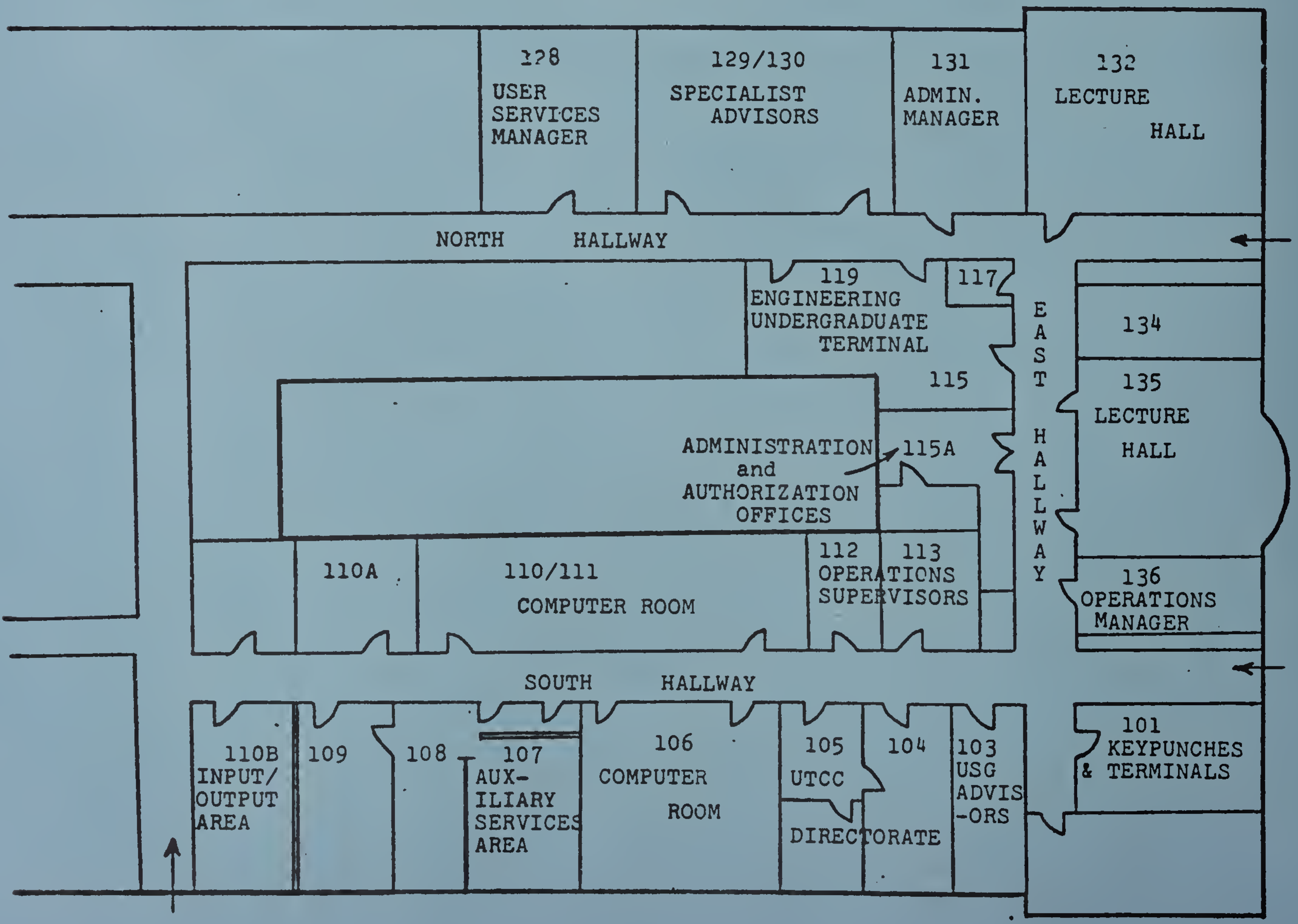
7094 SERVICES 26





FLOOR PLAN: 12th FLOOR BURTON TOWER

FLOOR PLAN: UNIVERSITY OF TORONTO COMPUTER CENTRE
SANDFORD FLEMING LABORATORIES



* Rooms 106 through 109 are being reconstructed to accommodate the System/370-165

PROJECT '72

C. A. Ford, Janet Marsh

Organization

The Computer Centre has code-named the work of installing the SYSTEM/370 Model 165 and its prerequisite changes "PROJECT '72". This seemed appropriate when we fully expected the new computer to be installed in June of 1972. Now, of course, it is to be operational by January 3, 1972.

The entire management and staff of UTCC are being assisted with the installation of the S/370-165 by IBM, by the Physical Plant Department, and by the contractors hired by the University to expedite the construction and mechanical work. Mr. C. A. Ford, Assistant Director of UTCC, is acting as Project Manager, steering all activities.

Physical Changes

If you have visited our central computer facility during the past month you will have noticed the structural changes which were occurring. Rooms 106, 107 and 108 will become one large room, with a raised floor, for the accommodation of all card readers, card punches, printers, tapes and disks. The relocation of this equipment will take place on the weekend of December 4 and 5. The east end of Room 106 will become the new I/O Area.

The keypunches and terminals have been moved to Room 101 from Room 109, allowing the floor in Room 109/110B to be raised. It will then house the Auxiliary Services equipment.

Carrying out other changes such as the longer ramp in the hallway, additional air conditioning facilities and the raising of all doors in the hallway may have necessitated some downtime or inconvenience but we have planned to keep this to a minimum. Refer to the article on system downtime for December in the SYSTEM/360 General Services section of this Newsletter for details related to actual system reconfiguration tasks.

Software

But hardware and the computer rooms are not the only area of change at the Computer Centre. The Development Group has produced new versions of HASP and of OS/360 Release 20.1. These are required to support the new

SYSTEM/370 hardware as well as the the existing hardware configurations during the present period.

It should be noted that our operating systems for the SYSTEM/370 will continue to be versions of HASP and of OS/360. All existing IBM OS/360 manuals will still be applicable ... there are no "OS/370" manuals!!

To facilitate the additional software testing involved and to support user job throughput the Computer Centre has extended its weekend hours for processing only; input/output facilities are not available.

Reference Documentation

The Users' Reference Manual has been reviewed by the UTCC management and a strong effort is underway to bring it up to date. A number of updates will be released, starting in November. The effects of both the S/370-165 project and of general creeping obsolescence will be covered by these updates.

The UTCC Miniguide will also be updated to cover the advent of the S/370-165.

WHY DECEMBER?

We have been asked why we are installing the S/370-165 in December, of all times. Veteran users recall only too well how disruptive such system changes can be and how UTCC has long intended never to make a significant change during a high-volume period.

The reason is simple: taking delivery of the S/370 so early will save the University a substantial amount of money by avoiding the effect of a recently announced price increase by IBM. Fortunately, this also means that the Computer Centre will be able to upgrade its systems to S/370 calibre sooner than planned.

Happily for us all, the schedule can take excellent advantage of the official holidays themselves. As the schedule now stands, only two working days of service will be lost entirely. These are Monday and Tuesday, December 27 and 28. Special arrangements have been made to obtain extra I/O devices, allowing S/370 testing to proceed in parallel with regular S/370 production. This will permit operation on December 23 and 24 as if those days were Saturday and Sunday. Thursday and Friday, December 29 and 30 should offer a degree of free service as UTCC carries out final system checkout operations. Regular service is anticipated for Monday, January 3.

The performance advantages of the S/370 mainframe should more than repay the cost to the users' patience during the period from January until June, which was the originally scheduled month for its installation.

SUGGESTIONS

Janet Marsh

Since the last Newsletter we have received only 42 suggestions from our user community. These suggestions are broken down into the following general categories: technical issues (9), Computer Centre policies (5), equipment and physical plant ideas (5), advising services (1), general job handling procedures (4), keypunches (7), system test time (3), manuals (2), and miscellaneous (6). Some of these are quoted and discussed below.

Suggestion: "Please have mercy upon Interactive users. When you install new terminals allow space at the terminal for paper, books, etc. Put barriers up between the terminals. Air condition the room."

Reply: There will definitely be more room for typewriter terminals in the new location, Room 101 Sandford Fleming Laboratories. Tables will be provided at each terminal. The possibility of installing air conditioning is being investigated. Partitions have been planned.

Suggestion: "...more room and more keypunch machines at ASUT."

Reply: Plans are currently underway to increase these facilities at both of the High Speed Job Stream terminals. Space and budget may be problems which can only be solved with help from the sponsoring faculties.

Suggestion: "The CALCOMP System is too slow."

Reply: The hours of service for the CALCOMP Plotter are 8:00 a.m. to 10:00 p.m. to ensure that experienced operators are present. We are scheduling more frequent dumping of the CALCOMP data set to utilize this time period more effectively.

Suggestion: "If you can't state all the limitations of PL/C somewhere, keep PL/C off-line until it is useful. I hear PLUTO is even worse."

Reply: Refer to the article on PL/C and PLUTO in the HIGH SPEED JOB STREAM section of this Newsletter.

Suggestion: "In as much as System 1 is moving across the street, and the SYSTEM/370 is coming in, and System 2 is going away, then you have an empty computer room. Therefore, why not bring the 7094 back across the street and try DISPATCHER again?"

Reply: Would you believe a System/370-165 dispatching a 7094, a System/360-65, and a PDP-8/s?

Some of you may have noticed the GRAFFITI boards placed in ASUT, EUT and the local I/O Room. These are intended to complement the already existing Suggestion Boxes and to provide a facility whereby users may express their views publicly and receive quick replies from UTCC staff.

Many of the suggestion box items would have been very effectively pursued in this openly visible way. But continue to use the suggestion box route whenever it seems appropriate to you. They are not to be decommissioned.

BURTON TOWER GRAFFITI BOARD

J. V. Walton

The prototype Graffiti Board was field-tested, as an adjunct to personal contact and the Suggestion Boxes, on the 12th Floor, Burton Tower, opposite the 7094 room.

It has proved such a success that more are being installed in other UTCC user areas. The past month's topics, involving both System/360 remote terminal and 7094 operations, have ranged too widely for synopsis here, but the advice, gripes, requests etc. have been largely constructive and instrumental in improving UTCC services. Let's keep up the dialogue.

PERSONNEL CHANGES

Jennifer Schick

During the month of November the staff of the Computer Centre has welcomed seven new members.

Ward Beattie joined the I/O Group replacing Robyn Turnbull who left us at the end of last month.

Selby Shanly joined Al Wickens' Development Group at 49 St. George.

Sam Goldfarb's Interactive Systems Group is rapidly increasing in number with the addition of Kamal Jain, McKenley Esnard and Ronald Thompson as Computer Operators.

The Computer Centre has installed a Bell Telephone call director unit. Its operator is Miss Marita Scholz, located in Room 130. Marita, as well as being our switchboard operator, acts as a receptionist for the Users' Service Group.

On November 15 Derry Cox, formerly of Erindale College, joined the Computer Centre as the new I/O Supervisor and Roy Finlayson replaced Don Tough as Processing Supervisor.

Unhappily we said good-bye to Don Tough, Zoltan De Nemethy, Rene Lemmens, and Janet Norman during November.

USER SERVICES GROUP CONSULATION BY APPOINTMENT

Carol Davidson

Users' Services Group has instituted a new scheme of consulting by appointment. Instead of a "random-access" consulting system, the system is now "prescheduled single-access per user".

We hope this will make it easier for you to find USG staff members at their desks when you expect to see them, saving you from coming over to the Computer Centre needlessly. In future, when you get programming advice from us, your consultant will be 'devoted' to you alone while you are there.

Appointments can be made either via the advisor in Room 103 at the time of your problem or through Miss Scholz, our receptionist, in Room 130, extension 5270.

NEWS FROM THE DEPARTMENT OF COMPUTER SCIENCE

Corley Phillips

Departmental Council

The first meeting of the Council was held on October 29, 1971. The faculty members are Professors Cook, Corneil, Hull, Mason, Mylopoulos, and Swenson. The newly elected graduate student members are Larry Weissman, Frank Tompa, Rich Kinread, Eric Hehner, and Harvey Gordon. Undergraduate representatives are Jim Heifitz (4th year), Julie Fischette (3rd year) and Dave Tilbrooke (2nd Year). Elections for the first year representative are in progress.

The Council heard reports of the chairmen of various committees. Discussion was held on the possibility of a course-work (i.e. no thesis) M.Sc. degree and a part-time Masters program.

Student Statistics

The graduate department has forty M.Sc. students, five in a two-year program, 30 in a one-year program, and five completing their work for their degrees. Fifty Ph.D students are enrolled, four are "almost done". Twenty-five have indicated that they hope to complete their work in 1972.

This June will be the first time a B.Sc. graduate can be a Computer Science specialist. It is thought that between 15 and 20 fourth year students will qualify. At the other end of the spectrum, the department is giving first year courses in computing to over 800 students in Arts and Science, Engineering Science, and the Division of Extension.

Computer Science Specialist Core Courses

The Curriculum Committee is revising the core course requirements. At the present time, the following computer science courses are being proposed as the "core" program.

	Fall	Spring
1st year	Introduction to Computing	Applications
2nd year	Computer Organization	Programming Languages
3rd year	Information Structures	Numerical Algebra
4th year	Computability and Logic	Automata Theory
	Operating Systems	
	Numerical Analysis	

Recommended options will allow a student to pursue further courses based on his interests, which might be in Data Processing, Computer Architecture, Applications, or the theoretical aspects of computing.

RECENT ACQUISITIONS IN DEPARTMENT OF COMPUTER SCIENCE LIBRARY

Berztiss, A. T.
Data Structures: Theory and Practice.
New York, Academic Press, 1971.

Conway, Richard W.
Theory of Scheduling, by R. W. Conway, W. L. Maxwell and L. W. Miller.
Reading, Mass., Addison-Wesley, 1967.

Cooper, Leon N.
Introduction to Methods of Optimization, by L. N. Cooper and D. Steinberg.
Philadelphia, W. B. Saunders, 1970.

Daniel, Cuthbert.
Fitting Equations to Data: Computer Analysis of Multifactor Data for Scientists and Engineers, by C. Daniel and F. S. Wood.
New York, Wiley-Interscience, 1971.

Daniel, James W.
The Approximate Minimization of Functionals.
Englewood Cliffs, N. J., Prentice-Hall, 1971.

Desmonde, William H.
Computers and Their Uses. 2nd ed.
Englewood Cliffs, N. J., Prentice-Hall, 1971.

Gries, David.
Compiler Construction for Digital Computers.
New York, Wiley, 1971.

Infotech Ltd.
The Fourth Generation.
Maidenhead, Eng., Infotech, 1971.

Jacquez, John A.
A First Course in Computing and Numerical Methods.
Reading, Mass., Addison-Wesley, 1970.

Kapur, Gopal K.
IBM 360 Assembler Language Programming.
New York, Wiley, 1970.

Parslow, R. D., ed.
Computer Graphics and Medical Research and Hospital Administration, ed. by R. D. Parslow and R. E. Green.
London, Plenum Press, 1971.

Paz, Azaria.
Introduction to Probabilistic Automata.

Ralston, Anthony.
FORTRAN IV Programming: A Concise Exposition.
New York, McGraw-Hill, 1971.

Slagle, James R.
Artificial Intelligence: The Heuristic Programming Approach.
New York, McGraw-Hill, 1971.

Symposium on the Numerical Solution of Partial Differential Equations, 2nd, University of Maryland, 1970.
Numerical Solution of Partial Differential Equations (SYNSPADE 1970) Ed. by B. Hubbard.
New York, Academic Press, 1971.

Talbot, A., ed.
Approximation Theory.
London, Academic Press, 1970.

United Nations Educational, Scientific and Cultural Organization (UNESCO)
UNISIST: Study Report on The Feasibility of A World Science Information System, by UNESCO and the International Council of Scientific Unions (ICSU)
Paris, UNESCO, 1971.

Wells, Mark B.
Elements of Combinatorial Computing.
Oxford, Pergamon Press, 1971.

PRODUCTION STATISTICS

Jennifer Schick

The number of jobs run on all computer systems has increased since last month. In particular, the High Speed Job Stream increased by 166% since last month. The total number of jobs run on all systems during the month of October has more than doubled since September.

In comparing the figures for 1971 with those of last year (TABLE II), there has been an increase of almost 150% in the total number of jobs run. Once again, the HSJS service accounts for a large portion of this increase. For comparison the overall increase from October 1969 to October 1970 was only 11%.

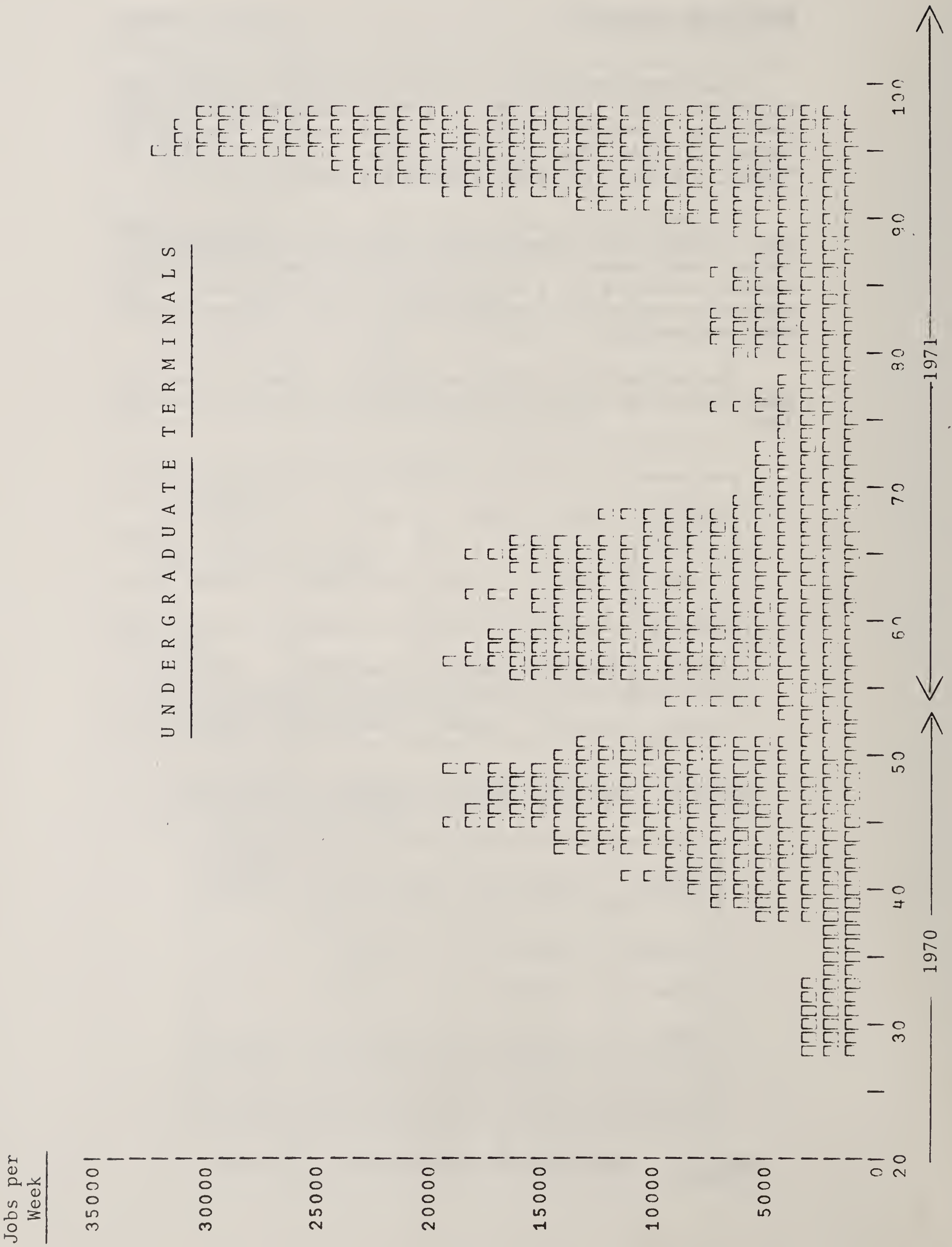
The accompanying histogram shows the dramatic jump in High Speed Job Stream service since its implementation in 1970.

SYSTEM	AUG.	SEPT.	OCT.	OCT./SEPT. CHANGE
S/360	16,200	15,459	21,342	+ 38%
7094	689	740	787	+ 6%
HSJS	25,781	44,442	118,032	+165%
TOTAL	42,670	60,641	140,161	+131%

TABLE I: JOBS RUN - AUGUST, SEPTEMBER, OCTOBER 1971

SYSTEM	OCT. '70	OCT. '71	1970/71 CHANGE
S/360	13,746	21,342	+ 55%
7094	1,753	787	- 55%
HSJS	41,094	118,032	+187%
TOTAL	56,593	140,161	+148%

TABLE II: COMPARISON OF JOBS RUN OCT. '70 VS OCT. '71


UNDERGRADUATE TERMINALS

SYSTEM RELIABILITY

Don Tough

The reliability of the S/360 Systems for September and October are shown in the following table for comparison.

SYSTEM	MONTH	UPTIME	MTBF
S/360 #1 local and Remote GPJS and Interactive Systems.	September	98.6%	22.5 hrs
	October	96.0%	25.1 hrs.
S/360 #2 local GPSS and HSJS	September	98.1%	20.3 hrs.
	October	96.6%	6.4 hrs.

Uptime decreased slightly on System #1 due to a number of problems with the disk drives and the processing unit. These problems have now been corrected.

System #2 experienced a decrease in uptime as a result of a system software problem which has now been resolved.

DAILY SUMMARY OF SYSTEM PROBLEMS

Don Tough

Users may have observed a new piece of material on the notice board in Room 110B called "Assurance Minutes". This material is published daily by members of the Computer Centre Operations group to provide:

- a brief summary of all systems' problems that have occurred in the last 24 hours;
- a brief summary of action being taken by the Computer Centre on any software or hardware problems;
- to provide a brief summary of software and hardware changes which have been applied to the system or are about to be applied;

- provides a brief summary of staff comments and activities related to the system, such as hardware maintenance performed, and operator and user problems which have been encountered.

In addition, there is a detailed summary of various activities which have taken place on the system such as IPL's, test time, and unscheduled maintenance, with appropriate times indicated and amount of computer downtime summarized.

Although directed primarily to the staff of the University of Toronto Computer Centre, the Assurance Minutes will be posted daily to provide additional information for Computer Centre users.

CREDIT REQUESTS FOR OCTOBER

H. Kugel

The table below summarizes the Credit Request activities for October. Our largest problem area this month, the area of software, dealt with the forced cancellation of jobs because of HSJS monitor bugs and the need for large blocks of contiguous scratch space for SORT/MERGE applications. In the area of hardware, our biggest difficulty was with the printers where we had four cases of job failure.

However, despite an increase in the number of problems, the ratio of credit requests to total job volume decreased, as the following table shows:

	NOVEMBER			OCTOBER
	S/360	7094	TOTAL	TOTAL
HUMAN	7	1	8	13
SOFTWARE	30	1	31	16
HARDWARE	10	2	12	15
TOTAL	47	4	51	44
% OF JOBS RUN			.20%	.28%

SYSTEM STATUS BULLETINS ISSUED

Janet Marsh

60:71:1	Scheduled Shutdown on Sunday, October 24, 1971
60:71:2	7094 Tape Users
61:71:1	Availability of Release 18.6 Processors Under Release 20.1
62:71:1	Paper Tape Copy Facility
63:71:1	Test Day for Release 20.1 of OS Rescheduled for Friday, October 29, 1971
64:71:1	"READ ONLY" Tape Service
65:71:1	Release 20.1 Implementation on Monday, November 8, 1971
66:71:1	Release 20.1 Features of Interest to Users
67:71:1	Release 20.1 Implementation on Monday, November 8, 1971
68:71:1	Preparations for Installation of System/370
68:71:2	Two Major Milestones in the System/370 Installation
69:71:1	HASP II V 3.0 Implementation on Tuesday, November 16, 1971
70:71:1	Upcoming Courses for November/December
71:71:1	System/360 No. 1 to be moved on Friday, November 19, 1971
72:71:1	Seminars on FORTRAN and Statistical Packages at OISE

SPECIAL FLASH ABOUT SPITBOL

C. A. Ford

The SPITBOL processor is to be included in the repertoire of High Speed Job Stream languages early in 1972. UTCC had intended to provide it by January 3, at the original request of Professor Peter Roosen-Runge. Implementation has been delayed by a question of source/object code compatibility, then problems with the previously committed PL/C and PLUTO, and now the demands on machine time and staff of the S/370 Project 72. However, the peak load of Project '72 systems staff is past and HSJS processor and monitor work is being expedited.

SCHEDULED DOWNTIME FOR INSTALLATION OF SYSTEM/370

Janet Marsh

During the month of November, the following reconfiguration changes occurred:

- System #1 and System #2 were recabled as separate systems, and System #1 was moved to its new location in Room 333 McLennan Physical Laboratories;
- the remote batch terminals were moved from System #1 to System #2;
- the equipment in the I/O Area and in the Auxiliary Services were moved temporarily to Room 111 Sandford Fleming Laboratories;
- the 2741 terminals and the 029 keypunches were moved to their new location in Room 101 Sandford Fleming Laboratories.

During the month of December several more reconfigurations will occur. These changes as well as the corresponding system downtimes are as follows:

- System #2 will be unavailable from Friday, December 3 at midnight until Saturday, December 4 at midnight to permit moving the I/O equipment to its new location in Room 106/107/108 Sandford Fleming Laboratories;
- System #2 will shut down December 22 for the normal University Christmas holidays. It will be available for processing also on December 23 and 24, but will be removed the following week as the S/370 installation is completed in Room 111, Sandford Fleming. Batch service will not be available on December 27 and 28;
- the System/370 is scheduled to become available for UTCC software checkout by December 29. Some user work may be run at this time, at no charge;
- full production is scheduled to start at 8:00 a.m., January 3.

NEW SERVICES AND FACILITIES FOR SYSTEM/360 MAGNETIC TAPES AND DISKS

Janet Marsh

The Computer Centre has implemented new procedures for the submission of user-owned tapes, the rental of UTCC tapes, and the maintenance of tapes. All transactions concerning magnetic tapes are now handled in the Auxiliary Services Area, Room 107 Sandford Fleming Laboratories. The hours for this service are from 8:00 a.m. to 10:00 p.m. Monday through Friday, and from 9:00 a.m. to 5:00 p.m. Saturday and Sunday. Information on utilizing this service is available in the Auxiliary Services Area.

There is also a service available for protecting tapes from being accidentally overwritten. "READ ONLY" visual labels will be placed on the back and front of such tapes to alert the operators that the tape <u>must</u> not be mounted with a write-enable ring. To have a "READ ONLY" label placed on a magnetic tape, submit a signed authorization notice to the Tape Librarian via the Auxiliary Services operator. It is also necessary to submit a signed authorization to have the "READ ONLY" labels removed.

All requests for disk rental or maintenance are now handled by the Tape/Disk Librarian in Room 112 Sandford Fleming Laboratories, phone 928-7319.

NEW PAPER TAPE TO MAGNETIC TAPE CONVERSION FACILITY

Janet Marsh

The PDP-8/s Media Conversion Facility has been replaced by an on-line IBM 2671 Paper Tape Reader. This new paper tape reader permits the submission of jobs into the General Purpose Job Stream for copying paper tape to magnetic tape.

The catalogued procedure available for access to this facility is:

```
//     job card parameters,CLASS=C
//    EXEC   PAPTAP,options
//SYSUT2 DD  UNIT=2400-2,DISP=(NEW,KEEP),LABEL=(1,SL),
//           DCB=(TRTCH=C,DEN=1,RECFM=V,LRECL=404,BLKSIZE=408),
//           VOL=SER=serial,DSN=PDP8PTP
//
```

NOTE: All paper tape copy programs are Class C to permit better scheduling of the paper tape reader.

The SYSUT2 DD card is included in the catalogued procedure and need not be specified by the user. The specifications given above for the SYSUT2 DD card are the default options and may be overridden by specifying the appropriate value in the option field on the EXEC card. These options on the EXEC card are as follows:

i)	SIZE=dd	may be used to alter logical record length and block size on the SYSUT2 DD card. 'dd' must be a multiple of 8. The default value for 'dd' is 40 giving a logical record length of 404 and a block size of 408. i.e., if 'dd'=56, then LRECL=564, and BLKSIZE=568;
ii)	DSN=name	may be used to override the data set name on the SYSUT2 DD card. The default data set name is PDP8PTP;
iii)	SER=serial	must be used to specify the tape serial number;
iv)	SEQ=n	may be used to alter the sequence number specified in the LABEL parameter on the SYSUT2 DD card.

The procedure for submitting such conversion jobs is as follows:

i) paper tapes must have at least 18 inches of blank tape (feed holes only) as header, and 18 inches of blank tape as trailer. The header is ignored and 52 consecutive blanks terminate the copy operation;

ii) clearly label the header and trailer as such;

iii) the maximum diameter of a tape reel is 10 inches, and the minimum inside diameter of the centre of a tape reel is 3 inches;

iv) submit your program, paper tape, and a UTCC Job Form to an operator in Room 110B Sandford Fleming Laboratories. Please indicate on the

UTCC Job Form whether your tape is inside or outside feed. The tape will be returned to you inside feed.

Any problems or special requests should be taken to an advisor in Room 103 Sandford Fleming Laboratories.

THE USE OF SPECIAL PRINTER OR PUNCH FORMS

Don Gibson

UTCC has established a new procedure to assure more accurate handling of special card or printer forms. If you use special output materials contact the Shift Supervisor in the Input/Output Area.

ADDITIONS TO PHONE SERVICE

Don Gibson

UTCC is now adding a new feature to the phone-out service. Occasionally it is necessary for a user's job to be cancelled through no fault of the user. For those interested in utilizing this facility, a file of user telephone numbers is now being kept and when such a cancellation is necessary, the user will be notified. For details contact the Shift Supervisor in the Input/Output Area.

M IS FOR MYSTERY

John Lees

Some SYSTEM/360 users have detected the existence of an undefined Class M. The mysterious Class M is used by Operations staff for high-priority time-dependent work such as:

- diagnostic dumps necessary to support recovery from system difficulties;
- backlog reports to indicate the number of jobs awaiting execution, printing and punching;
- authorization code checker update runs for opening of new accounts or adjusting existing ones.

These functions have one thing in common ... their existence is for the benefit of the user. Backlog notices are particularly appreciated for they inform users directly and aid operators in improving your throughput and turnaround. The timely maintenance of the authorization code checker is also easily appreciated.

To assure the timeliness necessary for Operations' remedial actions or for provision of up-to-date information. Class M is restricted to UTCC staff.

So Class M is not for "mystery", but rather it is a
"MANAGEMENT MUST FOR McNAUGHTON".

RELEASE 20.1 OF OPERATING SYSTEM/360

R. Williams

Release 20.1 of the IBM OS/360 was put into production earlier this month. This was one of the major software changes required prior to the installation of the SYSTEM/370 the end of December.

We realize that implementing a completely new release of OS can be disruptive to our users, and therefore several measures were taken to ease the problems likely to be encountered. Recognizing that the language processors as well as the control programs were changing, arrangements were made to retain the Release 18.6 versions of the language processors so that users would have access to them if they were required. A list of the new catalogued procedures for access to these Release 18.6 processors follows:

Standard 20.1 Procedure	Release 18.6 Backup
ALGOFCLG	ALGCLG18
ALGOLDGO	ALGLDG18
ASMFCLG	ASMCLG18
ASMFLDGO	ASMLDG18
FORSGCLG	FSGCLG18
FORSGLDG	FSGLDG18
FORTGCLG	FTGCLG18
FORTGLDG	FTGLDG18
PL1LFCLG	PLFCLG18
PL1LLDGO	PLLDGO18
ALGOFCL	ALGOCL18
ASMFC	ASMFC18
ASMFCL	ASMFCL18
COBFCLG	COBCLG18
FORSGCL	FRSGCL18
FORSHCL	FRSHCL18
FORSHCLG	FRHCLG18

FORSHLDG	FRHLDG18
FORSHLG	FRSHLG18
FORTCALG	FOCALG18
FORTCALH	FOCALH18
FORTGCL	FORGCL18
FORTGLG	FORGLG18
FORTHC	FORTHC18
FORTHCL	FORHCL18
FORTHCLG	FOHCLG18
FORTHLDG	FOHLDG18
FORTHLG	FORHLG18
LKED	LKED18
LKEDG	LKEDG18
PL1DFC	PL1DFC18
PL1FSCL	PLFSCL18
PL1FSCLG	PLSCLG18
PL1FSLDG	PLSLDG18
PL1FSLG	PLFSLG18
PL1LFCL	PL1FCL18
SORT	SORT18
SORTD	SORTD18

In addition to the new procedures given above for Release 18.6 language processors, PL1V5CLG and PL1V5LDG may still be used to access the Release 18.6 Version 5.0 of PL/I.

These backup language processors will be retained until such time as any problems reported with the Release 20.1 processors have been corrected. However, they will not be maintained indefinitely and users who are having problems are urged to report them to USG promptly. Please watch for future System Status Bulletins and HOTNEWS items for advance notice of their withdrawal.

Users should also be aware of several of the new features in the Release 20.1 language processors. The major new features are:

FORTRAN i) The new H level processor for FORTRAN allows a larger program to be compiled by specifying the appropriate region size. Previously modules with more than about 250 statements had to be compiled with the large FORTRAN H compiler. Under Release 20.1, the following formula is suggested for estimating the REGION size:-

$$\text{REGION} = \frac{\text{ISN} + 600}{4} \quad \text{K}$$

where ISN is the number of lines of source code.

ii) In both the G and H levels of the compiler it is now necessary to separate format specifications by commas.

e.g., `FORMAT (16HO THE ANSWER IS ,I5)`

Previously the "," before "I5" was not needed.

PL/I The standard PL/I procedures listed in the Users' Reference Manual will now point to a Version 5 processor. This should not cause many problems for users who are recompiling complete programs. However, it is not possible to link existing load modules created under Version 4 with new load modules compiled by Version 5.

A complete description of the PL/I language features supported in Version 5 may be found in the PL/I (F) Language Reference Manual, IBM Form No. GC28-8201-3.

Users still wishing to use Version 4 of PL/I may access it by using the procedures PLLDG018 for compile load and go or PLFCLG18 for compile, link-edit and go.

COBOL The USA Standard COBOL is now available in addition to COBOL F. IBM is no longer supporting the latter and users are advised to switch to COBOL U as soon as convenient. The difference between COBOL F and COBOL U are described in the manual COBOL Differences USA Standard COBOL Conversion, IBM Form No. GC28-6395-1.

IEBCOPY The Utility program IEBCOPY has been expanded and can perform more jobs. See the Utilities Manual, IBM Form No. GC28-6586-12 for more details.

STATISTICS ON CATALOGUED PROCEDURE USAGE

R. Williams

The following tables show the usage, between September 10th and November 3rd, of the twelve most frequently used catalogued procedures. These show a breakdown between the various programming languages as follows:

Language	Number of Jobs	Percentage of Total
FORTRAN G	9411	62.3
PL/I	3111	20.6
Assembler	974	6.5
All Others	1649	10.6
	15145	100.0

Slightly more than half of the PL/I programs used Version 5 of the compiler. It is now apparent that PL/I Version 5 has been accepted as the production version of the language.

The statistics on the use of the Loader as compared to the use of the Linkage Editor are also interesting. It seems that about 67% of the PL/I programs use the Loader while only 25% of the FORTRAN programs use it. Users are reminded that the Loader is a simplified version of the Linkage Editor, Combining the link-edit and go steps into one step. At the price of losing some of the more powerful abilities of the Linkage Editor, the Loader will in many cases reduce the cost of a simple job. Please consult Section 4.3.1 of the Users' Reference Manual for more details on the use of the Loader.

Procedure Usage: September 10th - November 3rd, 1971

Procedure	S/360 #1	S/360 #2	Total	Percentage
FORTGC1G	2367	2178	4545	29.4
FORTGLDG	732	1331	2063	13.3
FORTCALG	424	912	1336	8.6
PL1V5LDG	135	1050	1185	7.7
FORSGCLG	375	553	928	6.0
PL1LLDGO	293	622	915	5.9
ASMFCLG	113	636	749	4.8
PL1LFCLG	361	261	622	4.0
PL1V5CLG	189	200	389	2.5
FORSGLDG	162	128	290	1.9
FORTGLG	89	160	249	1.6
ASMGCLG	93	132	225	1.5
Others (28 proc.)	551	1098	1649	10.7
Incorrect names	70	141	311	2.0
			15456	100.0

Statistical Libraries

Library	S/360 #1	S/360 #2	Total	Percentage
BMD (total)	68	73	141	14.6
SPSS	805	17	822	85.4
			963	100.0

Action in the statistical libraries is not particularly heavy. Of the 141 BMD programs run, 52 used the Multiple Regression Program, BMD02R.

INTERACTIVE REMOTE JOB ENTRY

S. Goldfarb

At the time of writing (November 10, 1971), activities relating to moving the System/360 Model 65 into McLennan Labs, Room 333, are proceeding most satisfactorily.

However, it seems likely that the facilities provided by the Remote Job Entry feature of CPS will not be available on the S/370 until some time early in 1972. Two approaches being considered are:

- provide the IBM Conversational Remote Job Entry (CRJE) system on the System/370;
- use a communication link between the S/360 and S/370.

Meanwhile, attempts are being made to establish some alternative interim procedure with all users who are affected.

SCHEDULE FOR INTERACTIVE SERVICES

S. Goldfarb

When the S/360 has settled into its new environment, a change in operating schedule is likely. The proposed new schedule is:

Monday - Friday	12:00 midnight - 4:30 a.m. 9:00 a.m. - 12:00 midnight
Saturday, Sunday	9:00 a.m. - 5:00 p.m.

Any changes to the current schedule will be announced through Newsletter, Bulletin, Coda-phone and "sign-on" messages.

INTERACTIVE SYSTEM PHONE NUMBERS

S. Goldfarb

The dial-up phone numbers currently in use by the Interactive Systems will remain unchanged after the move to McLennan Labs. The phone numbers are:

- APL	928-7200
- ATS	928-7100
- CPS	928-6200

- CPS (Teletype)	928-7247
- Coda-phone	928-6234 (System Status Advice)
- Terminal Trouble Reporting	928-7107

PUBLIC TYPEWRITER TERMINALS IN SANDFORD FLEMING LABS

S. Goldfarb

The public terminals from Sandford Fleming, Room 109 are being moved to Sandford Fleming, Room 101. A total of 10 public terminals will be made available.

PROJECT '72 - STOP THE PRESS NEWS

C. A. Ford

Major changes to the two S/360 systems were completed on schedule through the week ending Sunday, November 21. These changes were:

- HASP 3.0 was implemented on both systems on Tuesday, November 16;
- the shared 2314 disk unit was separated from System #2 so as to be ready to move with System #1 to its new room. This was completed during the night of November 18/19;
- during the night of November 18/19 revised OS/20.1 and HASP 3.0 systems came into service to support the revised configurations;
- on the night of November 19/20 the interactive system was moved to its new location (Room 333, McLennan Laboratories);
- on Saturday morning the second S/360-65 was brought up, complete with remote terminals;
- at 8:55 a.m. on Monday, November 22, the interactive S/360-65 came back into service, a full nine hours ahead of its target time. The system came up without hardware bugs, despite its disassembly, move, and reassembly, thus accounting for the early recovery.

The UTCC versions of OS, HASP and HSJS systems have also been fully tested on a S/370-165 in Poughkeepsie, New York. The S/370-165 to be installed at UTCC is in a Toronto warehouse awaiting the readiness of Room 111 Sandford Fleming Laboratories. Physical Plant work proceeds on schedule. The prospect of an operational S/370-165 during the last week in December looks solid.

RECENT PROBLEMS WITH PL/C AND PLUTO

R. Williams

Many users of our High Speed Job Stream have become aware of problems which have been arising from the implementation of the two PL/I compilers - PL/C and PLUTO. These have led to a stream of comments, both directly to our advisors and indirectly through our suggestion boxes. By now some of the difficulties have been resolved: better versions of PLUTO have become available; our advisors have learned a little more about PL/I; the users have learned to avoid known bugs.

One of the most common queries has been, "why did we implement both PLUTO and PL/C when neither of them appears to be working properly?" The history of this development may be found of interest.

PLUTO was designed and written by the Computer Systems Research Group here at the University of Toronto. PLUTO is a fast in-core compiler which accepts most of the features of the PL/I language. The preliminary version, installed this past September, was intended primarily to service some of the first year Engineering Science courses on an experimental basis.

In case PLUTO might not have been available in time, the PL/C compiler was obtained from Cornell University as a backup. In the end, it was decided to make both PL/I processors available through the High Speed Job Stream.

The presence of the originators of PLUTO on campus makes it relatively easy to have corrections made as problems arise. Consequently, by now a stable version of PLUTO is in use and further improvements will occur during the next few months.

Meanwhile, work continues on the PL/C compiler. Two approaches are being taken; one is the analysis and correction of bugs in the current version of PL/C (Version 5.6); the other is the evaluation of Version 6.2 which fixes some but by no means all of the problems. In this we must rely in part upon the supplier, Cornell University.

The control of HSJS processors is maintained by a never-ending MONITOR program. This program responds to the users' $JOB cards, selects and loads the correct processor. MONITOR is being rewritten by UTCC so as to more nearly prevent processor bugs from affecting other jobs and the throughput rate.

7094 MINIGUIDE

J. V. Walton

A pocket-sized guide for 7094 users is now available in all UTCC advisor areas, as well as in the '94 computer room and office in the McLennan Labs. Please let us know of errors or omissions, and how its usefulness could be improved.

7094 USER MEETING

J. V. Walton

On October 6 a meeting of '94 users and fans was held to explore the intensity and probable duration of the demand for 7094 services. The general consensus seemed to be that there were two types of 7094 users, the "locked-in", and the elective, with not very sharp boundaries between them. Few types of work could not, in an absolute sense, be accommodated on the S/360 or S/370, but the initial costs of program and data library conversions and the continuing penalties of tape mount charges and data representation inefficiencies would strongly discourage many users from making the transition. There seemed little doubt that the costs of the 7094 operation could be met at the current level of demand and price schedule in the foreseeable future.

Turnaround and input/output speeds are still in need of further improvement. The particular problems which emerged from the discussion, however, centred on the lack of documentation and limitations of access. The majority of these seemed to stem from a breakdown in communications. We do try to meet the needs we hear about.

7094 HOLIDAY HOURS

J. V. Walton

The University will be closed December 23rd through 26th, and December 31st through January 2nd. If you anticipate the need for 7094 service on these dates, or any weekend, please let us know well in advance. Call us at 928-7094.

UTCC DIRECTORY

	ROOM	PHONE 928-
DIRECTOR:		
Dr. John C. Wilson	SF105	6496
ASSISTANT DIRECTOR:		
Mr. C. A. Ford	SF105	2991
ADMINISTRATION MANAGER:		
Mr. Jerry Palter	SF131	8948
AUTHORIZATION CLERK:		
Mrs. Marje Rankin	SF115A	8702
DEVELOPMENT MANAGER:		
Mr. Alan Wickens	49 St. Geo.	6135
INPUT/OUTPUT SUPERVISOR:		
Mr. Derry Cox	SF112	7092
INTERACTIVE SYSTEMS MANAGER:		
Mr. Sam Goldfarb	49 St. Geo.	3787
INTERACTIVE SYSTEMS AUTHORIZATION CLERK:		
Mrs. Cathy Pidcock	SF115A	8703
OPERATIONS MANAGER:		
Dr. Dave McNaughton	SF136	6281
PROCESSING SUPERVISOR:		
Mr. Roy Finlayson	SF112	5058
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TECHNICAL EDITOR:		
Mrs. Janet Marsh	49 St. Geo.	6131
TERMINAL SUPERVISOR:		
Mr. Alan Jones	SF113	6220
USERS' SERVICES GROUP MANAGER:		
Mr. Robin Williams	SF128	2694
7094 MANAGER:		
Mrs. Joyce Walton	BT1207	7094
JOB STATUS QUERIES:		
SYSTEM/360		7373
7094		7094
Auxiliary Services		2988

UTCC COMPUTER EQUIPMENT

(a) SYSTEM/360 MODEL 65

- located in SF 110/111
- provides General Purpose Job Stream and High Speed Job Stream services
- 1024K bytes of core
- 16 disk drives
- 1 drum
- 6 magnetic tape drives (2 9-track and 4 7-track)
- 6 display consoles
- 4 printers
- 4 card readers
- 2 card punches
- 6 remote terminals
- 1 paper tape reader

- OS/MVT with HASP

(b) SYSTEM/360 MODEL 65

- located in Room 333 McLennan Physical Laboratories
- provides Interactive Systems services
- 1536K bytes of core
- 8 disk drives
- 2 9-track magnetic tape drives
- 1 printer
- 1 card reader
- 1 card punch
- 59 2741 typewriter terminals

- OS/MVT with CPS, ATS, and APL

(c) 7094 II

- located in Room 1203 Burton Tower
- 32K words of core
- 1 disk
- 8 magnetic tape drives
- input/output via a 1401 computer

UTCC AUXILIARY EQUIPMENT

- located in SF Room 107
- SYSTEM/360 Model 20 for unit record services
- CALCOMP Plotter
- card sorter

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